Following the section on the ethnology of the Andamanese we have an excellent description of their form and size, forty-eight males and forty-one females having been most carefully weighed and measured, with the result that the average height of the men is 4 feet 10¾ inches and of the women 4 feet 7¼ inches, and the respective average weights 98⅛ lbs. and 93¼ lbs. To give an idea of the thoroughness with which the author has dealt with his subject, under the heading "Anatomy and Physiology," we have a series of five sets of observations on the temperature and rate per minute of respiration and of the pulse on five subjects ranging in age from seventeen to twenty-two years. Descriptions of the pathology, medicine, physiognomy, physical powers and senses, psychology and morals, magic and witchcraft, of the tribal distribution, topography, arithmetical faculties, and of their habitations, government, laws, crimes, &c., complete the first part.

With respect to diseases it appears that pulmonary consumption and other pectoral complaints are or were the chief causes of mortality among these people; to these have unfortunately now to be added that "terrible scourge" which has spread over the greater part of Great Andaman, and which, as in Australia, unless successfully dealt with, threatens, as Mr. Man informs us, "the early extermination of the race."

The morals of the Andamanese in their primitive state appear to be of a distinctly high standard, as will appear from the following extracts:—

"Much mutual affection is displayed in their social relations, and, in their dealings with strangers, the same characteristic is observable when once a good understanding has been established . . . every care and consideration are paid by all classes to the very young, the weak, the aged, and the helpless, and these, being made special objects of interest and attention, invariably fare better in regard to the comforts and necessaries of daily life than any of the otherwise more fortunate members of the community. Andamanese children are reproved for being impudent and forward . . . they are early taught to be generous and self-denying . . . the duties of showing respect and hospitality to friends and visitors being impressed upon them from their early years," &c. With regard to their modesty Mr. Man states that the esteem in which this virtue is held, "and the self-respect which characterises their intercourse with each other may even be said to compare favourably with that existing in certain ranks among civilised races." It is much to be regretted that the so-called "civilisation" with which these people have been brought into contact should have led to the moral deterioration which the author with scientific candour does not scruple to disclose. It is perhaps hardly necessary to add that the stories concerning the prevalence of cannibalism among these tribes have been completely disproved both with respect to the present time and to former periods of their history.

In the second part of his interesting monograph the author treats of the language, relationships, names, initiatory ceremonies, marriage, death and burial, superstitions, religious beliefs, demonology and mythology. In the third part we have an account of the social relations of the Andamanese, their mode of life, games and amusements, and a description of their weapons, manufactures, &c. Want of space forbids anything more than a mere mention of the ground covered by these sections, but it will suffice to say that they are characterised by the thoroughness which is such a valuable feature of Mr. Man's work. The few slight defects which we have noticed are on matters of quite minor importance, such, for instance, as the statement in the introduction, that "the water in the harbour of Port Blair has been found to be remarkable for its high density, as is evidenced by the rapid oxidation of iron immersed in it;" in its present form this reads rather like a case of *non sequitur*.

It remains only to add that in the fourteen appendices we have a mass of most valuable information on various subjects connected with these islands and their inhabitants: most of these appendices are philological; one is devoted to a list of the native trees, and another to a list of the shells.

The Report on the language of the South Andaman Islanders is reprinted from the *Transactions* of the Philological Society, before which body it was delivered by its author, Mr. A. J. Ellis, F.R.S., as his retiring presidential address in 1882. The volume is illustrated by a good series of typical photographs of the natives and five plates of weapons, ornaments, &c., and a map of the islands forming a frontispiece.

In concluding this notice we must not omit to mention that Mr. Man's mode of treatment is based upon the instructions drawn up by Col. Lane-Fox (now General Pitt-Rivers) on behalf of a Committee of the British Association, and published among the Reports for 1873. This Report was afterwards issued in an expanded form as a Manual of Anthropological Notes and Queries, and the work now under consideration may be regarded as one of the most important practical results of the labours of the Committee referred to. We believe that Mr. Man is at present engaged in a similar study of the inhabitants of the neighbouring Nicobar Islands, one of which—Camorta—was selected as a station by the Eclipse Expedition of 1875. We shall look forward with much interest to the continuation of the author's labours in this new field. R. M.

COMMERCIAL ORGANIC ANALYSIS

Commercial Organic Analysis. Vol. I. By Alfred H. Allen, F.I.C., F.C S. (London: J. and A. Churchill, 1885.)

NOTWITHSTANDING the fact that enormous numbers of text-books on chemical subjects have been appearing during recent years, a few comprehensive works on the subject of commercial analysis have been long and greatly needed. When it is considered how every day commerce has been availing itself more and more of the powers of scrutiny and control afforded by chemical analysis, this delay may appear remarkable. But the truth is that to produce such a work very exceptional qualifications and a very unusual degree of experience are necessary. A work on commercial analysis must be thoroughly practical if it is to be useful, and prescribe methods of analysis only which experience has proved to be accurate and serviceable. Analysts as a rule have their specialities—these specialities often being determined by local industries—and long experience fre-

quently leads them to devise or modify processes without any record appearing outside their own laboratories. Almost every analyst has his own manuscript "process-book," according to which he expects his assistants or pupils to work, and so it becomes a matter of extreme difficulty for an author to produce a work that shall be generally acceptable as a laboratory guide. The too frequently occurring discrepancies in commercial analyses may in a measure be attributed to the same cause, and there can be no doubt that a unification in the methods of conducting and recording analyses is greatly to be desired. This end will doubtless be greatly furthered by the production of standard books such as the present one.

A first edition of the work before us appeared in 1879. It has undoubtedly taken already a very high position, and has been welcomed as filling a conspicuous gap in the literature of analytical chemistry. The value of a division between organic and inorganic analysis to the ordinary analyst may not be great, but it is useful to the author in enabling him to keep his work within bounds. The first edition of the book appeared in two volumes; in the new edition a rearrangement and extension is being made, and it will now occupy three volumes. The first volume deals with organic bodies of the fatty series and of vegetable origin, and includes chapters on the alcohols, ethers, and other neutral derivatives of the alcohols, sugars, starch and its isomers, and vegetable acids. The second volume, which is to appear shortly, will be devoted chiefly to coal-tar products and bodies of the aromatic series, to hydrocarbons generally, fixed oils and the products of their saponification, and the tannins. Nitrogenised organic substances, including cyanogen compounds, alkaloids, organic bases, and albumenoids will be treated of in the third and concluding volume. This arrangement of the subject is, we think, a great improvement on the previous one, and makes the book much more convenient for reference.

Mr. Allen treats his subject in as scientific a manner as possible, and this gives quite a peculiar character to his work. It is not, like so many books on analysis, merely a series of receipts or processes of chemical handicraft; but a work assuming the possession of some really scientific knowledge on the part of those using it. It would be easy to go too far in attempting to generalise in such a subject as commercial analysis and in introducing theoretical details; but although the author goes so far, for instance, as to introduce structural formulæ for many of the substances dealt with, it cannot be said that he demands more knowledge than should be forthcoming from those engaging in this difficult and often obscure branch of analysis.

The introduction, extending over thirty-five pages, embraces a description of some general methods, such as the determination of specific gravity, of melting- and boiling-points, optical properties, &c. The rest of the volume is devoted to a consecutive account of substances comprised under the several headings. After the author has described briefly but sufficiently what the substance is or ought to be, he gives the methods for its detection, estimation, or analysis, and intersperses the account with such general information as is likely to be of value to the analyst. We cannot attempt to enumerate the somewhat remarkable collection of products dealt with in the course of the work. Wines, beers, cordials, tinctures, chloroform, sugars, confectionery, starch, vinegar, the commercial acetates, tartrates, and citrates—are examples taken at random, which will serve to give some idea of the variety. They are, however, treated in a connected manner, in illustration of which we may refer with special approval to the division on sugars, and starch and its isomers.

With regard to the methods recorded by Mr. Allen we may say that on the whole they are such as have borne the test of experience, whilst new processes or modifications of old ones are duly referred to and discussed. The author acknowledges assistance from many men of experience, and has, we think, used it to the best purpose. His descriptions are clear and concise, and the book is remarkably free from errors of any kind. We think it really an excellent enterprise, excellently carried out, and congratulate Mr. Allen on having produced a scientific and thoroughly practical book which, we are confident, will find a place in the library of every practical chemist.

RECENT TEXT-BOOKS OF DETERMINANTS

Lecciones de Coordinatoria con las Determinantes y sus principales aplicaciones. Por D. Antonio Suarez y D. Luis G. Gascó. (Valencia, 1882.)

Traité Élémentaire des Déterminants. Par L. Leboulleux. (Genève, 1884.)

Die Determinanten, für den ersten Unterricht in der Algebra bearbeitet. Von Dr. H. Kaiser. (Wiesbaden 1884.)

Lessons Introductory to the Modern Higher Algebra. By George Salmon, D.D. Fourth Edition. (Dublin, 1885.)

THE first of these works is outwardly a very handsome volume, and on examination we find that the authors have also done their part in the most painstaking and methodical way. The main part of the title, "Coordinatoria," is apt at first to mislead, and indeed after a cursory glance at the contents a cosmopolitan reader might be pardoned for thinking that "Coordinatoria" was a misprint for "Combinatoria," for what our grandfathers spoke of as the *Ars Combinatoria* is the subject of the opening chapters. "Coordinatoria" it is, however, and in the preface it is placed as a science side by side but in contrast with the science of Quantity.

There are in all twenty chapters in the book. The first seven (146 pp.) deal with permutations, combinations derangements or inversions of order, substitutions, and difference-products: they form a lengthy and most carefully prepared introduction to the theory which follows. The next ten chapters (242 pp.) deal with determinants, and expound all the more important properties in the most methodical, simple, lucid and ungrudging manner. The learner, for example, is prepared for the evaluation of a determinant whose elements are expressed in figures by—

§ 327. Simplification by addition.
§ 328. Simplification by subtraction.
§ 329. Simplification by addition and subtraction.
§ 330. Simplification by multiplication.

And so on, up to—